

# New Technology in Bicycle Facilities

SCAG Bikeways Toolbox for ATP

Rock Miller, PE

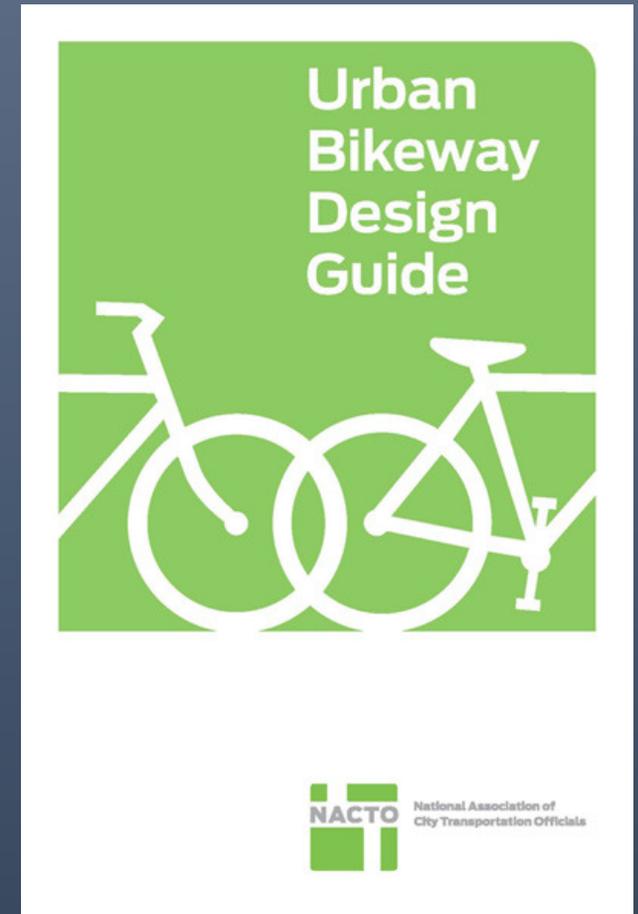
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## Starting Points

- Your Agency Bike Master Plan
- A good map
- Your Existing Infrastructure
- A modern Design Guide
  - NACTO is on-line



# Bike Route (Class III) Treatments

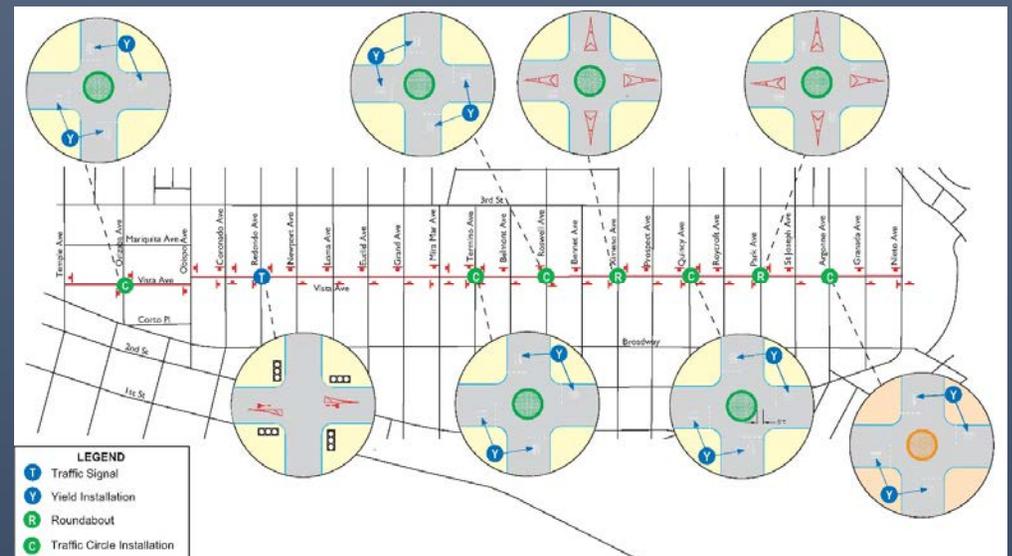


# Sharrows



# Bicycle Boulevard

- Minor Street Modified to Suit Bicycling
- Low Auto Traffic and Speeds
- Traffic Controls Optimized for Bicycling



# Bicycle Boulevards

- Portland, Berkeley, Palo Alto and others
- Parallel to Important Routes
- Appealing to All Classes of Users
- Residents enjoy Traffic Calming
- Alternate Name: Neighborhood Greenways



## Good Candidates

- Long Continuous Back Streets
- Streets that have a history of traffic calming needs
- Under 3000 cars per day upon completion
- Provide access to cycling destinations
- Easy to find in grids, but may be found in newer layouts



# Compact Roundabout, Long Beach



# Compact RAB, Austin TX



# Rain Garden, Portland OR



# Rain Garden Inlet



# Bicycle Lanes

- Can Often Fit on Existing Roadways
- Increase Confidence for Bicyclists
- Increase Certainty for Motorists
- Shall be One Way Facilities
- Less Attractive above 40 mph



# Bike Lane (Class II) Treatments

- Restripe to Narrow Lanes
- Prohibit Parking, if Possible
- Tailor to Existing Funding Sources
- Look for Road Diets
  - Work well on 60-64 foot streets
  - Width common in So. Cal.
- Well-suited for 4-lane Undivided



# Road Diet

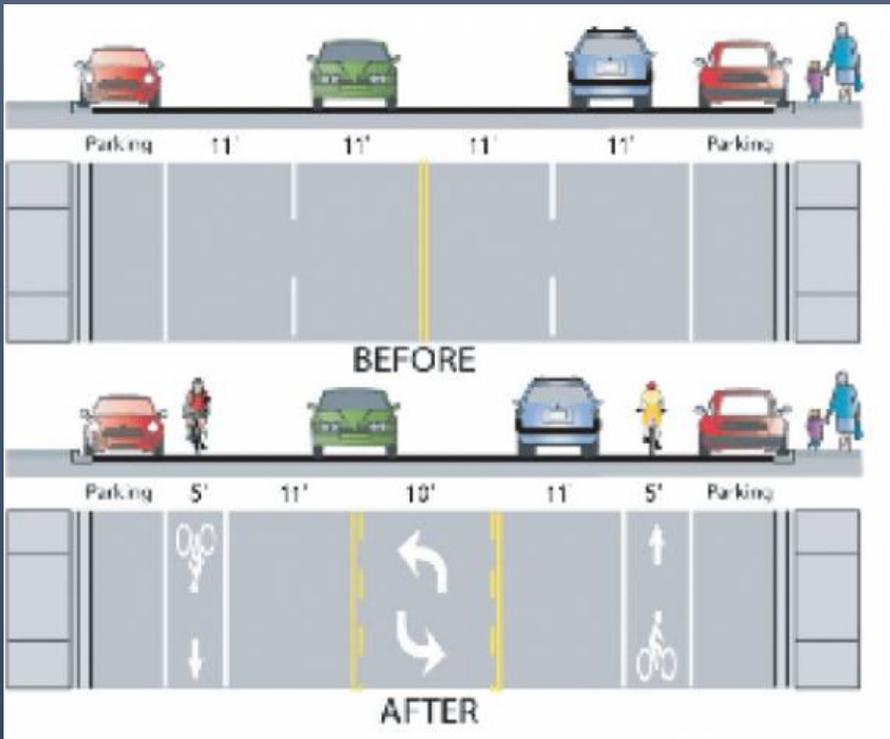


Photo: Michael Ronkin

# Bike Lane Widths

- 5 ft (1.5m) beyond marked parking stalls
- 4 ft (1.2m) beyond pavement edge
- 3 ft (.9m) beyond gutter



# Dooring

- Bicycle Collision with Opening Car Door
- Great Potential for Injury to Bicyclists
- Underscores need for Adequate Width



## Bike Lanes with Parking

- 12 ft (3.6m) minimum, may pose Dooring risks
- 13 ft (3.9m), more desirable
- 14 ft (4.2m): Most can ride outside door zone
- More parking activity = greater width
  - Some advocacy groups are opposed to bike lanes due to frequent inadequate width
- No Definitive Study, but evidence suggests even narrow lanes may reduce door risk compared to no lanes.

# Bicycle Lane Striping

- Generally adhere to width standards
  - Six-inch wide white stripe
  - Skip approaching intersections
- Use care in intersection treatments

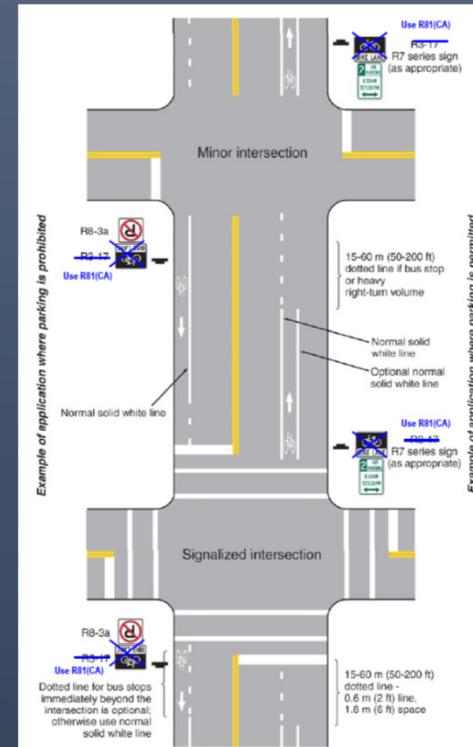


Figure 9C-1. Example of Intersection Pavement Markings—Designated Bicycle Lane with Left-Turn Area, Heavy Turn Volumes, Parking, One-Way Traffic, or Divided Highway

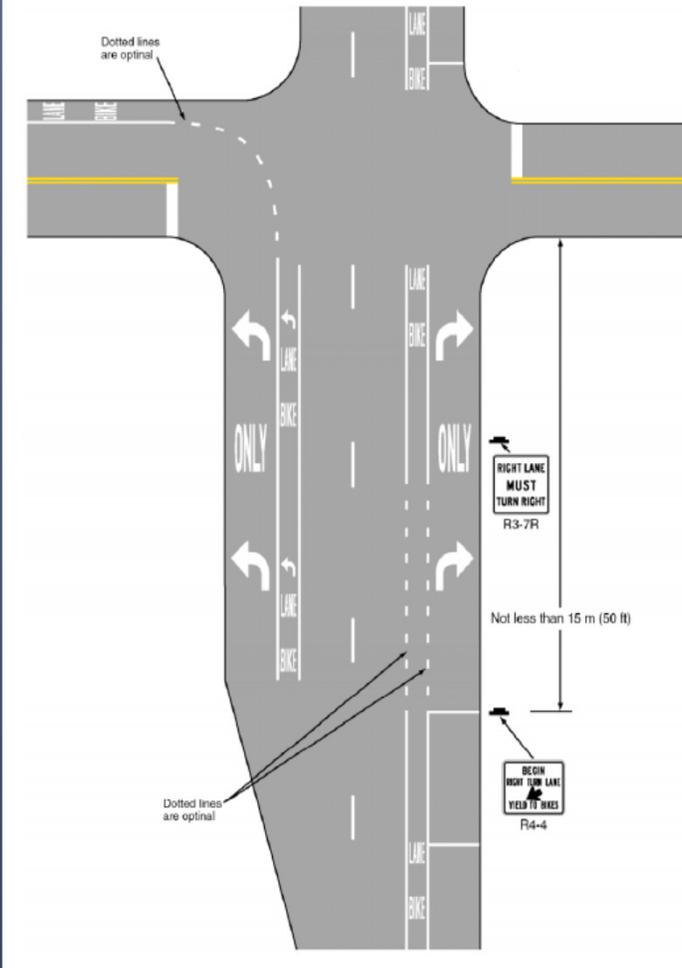
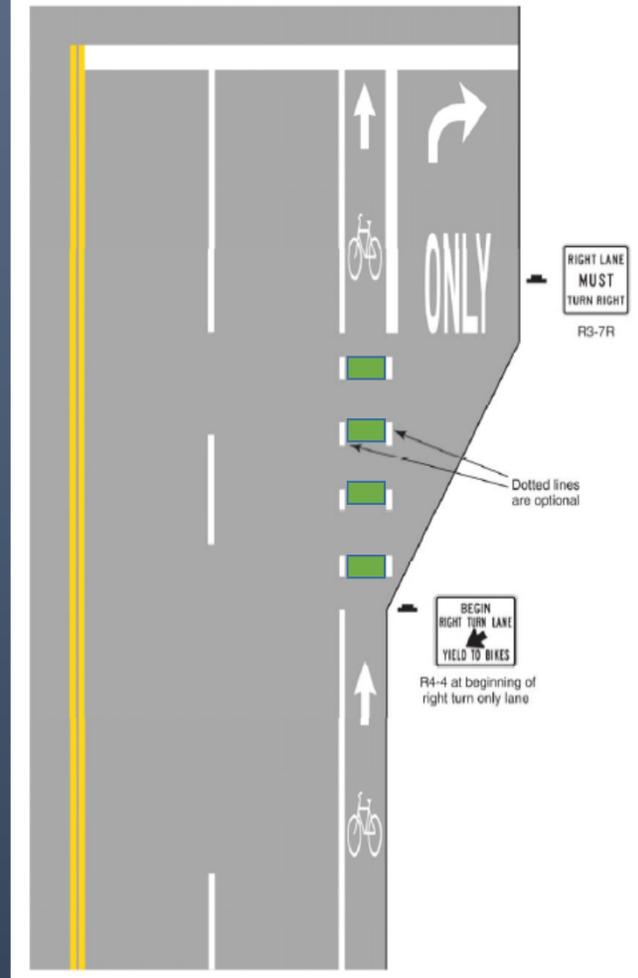


Figure 9C-3. Example of Bicycle Lane Treatment at a Right Turn Only Lane



Green has  
"Interim  
Approval" for  
Use Now

# Green Bike Lane

- Green Paint or Coatings in Conflict Areas have FHWA Interim Approval
  - Anyone can Use
  - Must Notify Caltrans
  - \$3-6 / sf



# Green Lane Treatments



Green must be bounded by white at this time

# Green Lane Treatments

These treatments do not meet Current Standards. Green must be bounded by white.

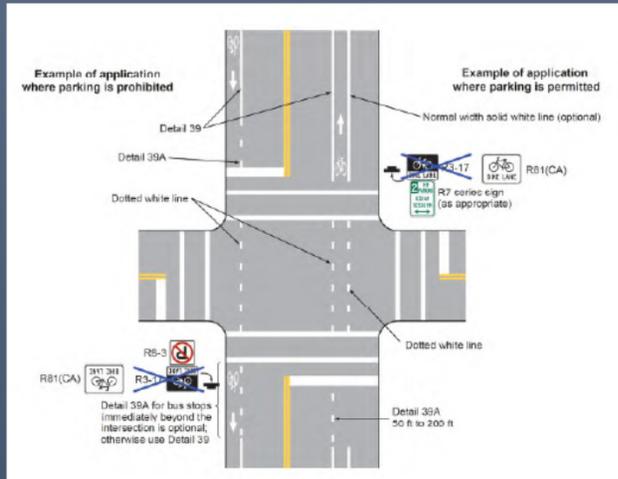


# Colored Bike Lane

- Continuous Non-Green Coloring Allowed as Architectural Treatment, not for Traffic Control



# Lane Lines Across Intersections



Now Allowable  
in CA



# Lane Lines Across Intersections

- Copenhagen

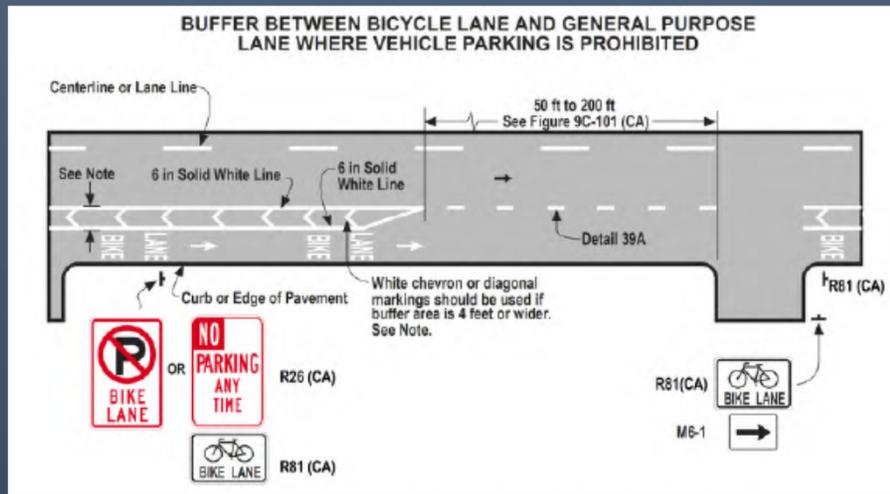


# Left Side Bicycle Lanes

- Formerly not Allowed by Design Guides.
- On One Way Streets
- Now in CA MUTCD
  - Sacramento, CA

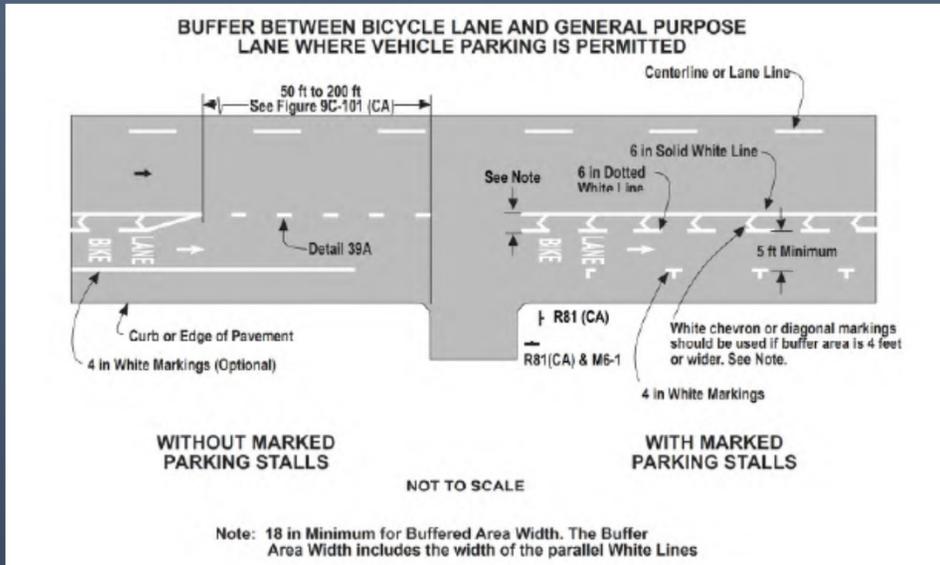


# Buffered Bicycle Lanes



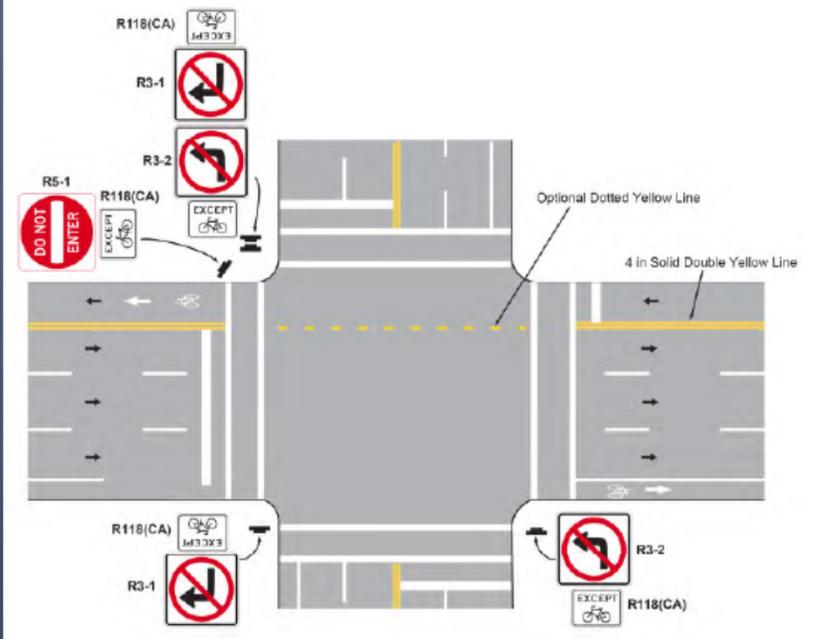
- Now Standard and Allowable in California
- Need 8 ft or More to use effectively

# Buffered Bicycle Lanes



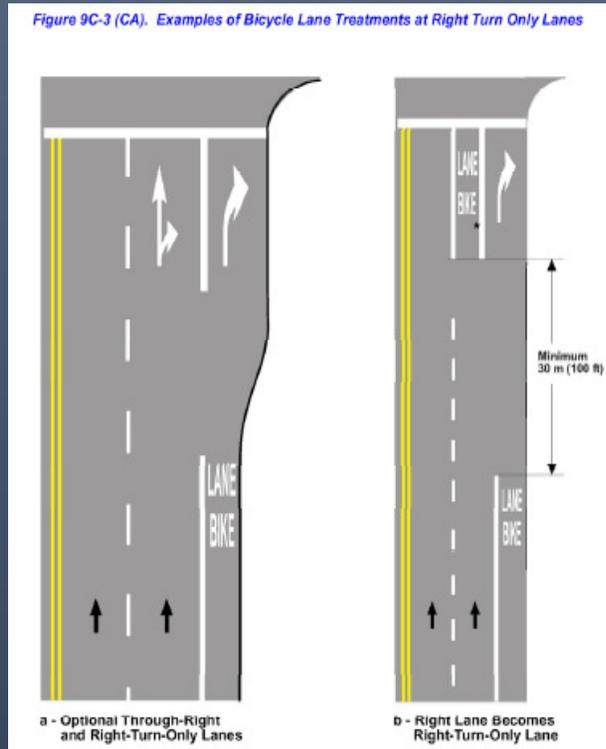
# Contraflow Bicycle Lanes

Figure 9C-105 (CA). Example of Contraflow Bicycle Lanes



# Difficult Locations

- Optional Turn Lanes
- Trap Turn Lanes
  - Both Require Bikes to Weave to continue Straight



# Floating Lane, San Francisco

- Useful when 15+ feet is available for parking and peak hour traffic lane
  - Bike lane next to curb when lane is in use
  - Bike lane next to parking when parking is allowed



# Floating Lane Overhead Sign

- Lexington, KY

**Vine Street bike lane location when on-street parking is permitted. Overhead signage indicates permitted lane usage.**



# Median Bikeways

- Requires control of all turns across Bikeway or low volume roadway



# Bicycle Box

- Long Beach, CA
- Requires Federal and State Demonstration Approval
- Many Experiments Underway in the U.S.
- Possible MUTCD 2017



# Bike Boxes



Victoria, BC



Auckland, NZ

# Class IV Treatments

- Cycle Tracks
- Separated Bikeways
- Protected Bikeways



# 9th Avenue, New York City

- Bike lane along left side (avoids transit)
- Left turn signals + bicycle signals
  - Reduces conflicts between cyclists and turning vehicles (also pedestrians)



Project won ITE  
Award in 2008  
No Federal  
demonstration status

# Long Beach, CA



- One or two way cycling
- Works well on downtown One Way Streets
- Curbs, planters, parking, etc
- Must be able to sweep
- \$30k per Signal intersection for poles and bike signals

# Montreal Cycle Track



# Montreal Traffic Control



# Vancouver Cycle Track



- Street closed to cars to allow outdoor dining on cycle track on weekends.

# Calgary AB



# Cycle Track Opportunities

- Temple City, CA
- Street wide enough for 6 lanes
- Traffic only needs 4 lanes
- Minimal Driveways
- Landscape and new pavement can get expensive (\$20/sf)



# Cycle Track Opportunity

- Street narrowed to make room for Cycle Track
- Redondo Beach CA
  - Connects Hermosa Beach to Redondo Beach Pier
  - Open Spring 2015



Questions

Questions?